Practical Methionine Reduction in Humans

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Version 10
July 14, 2015

This practical guide is under development as new information is located.

Web link to this guide:
www.AgingIntervention.org/PracticalMethionineReduction.pdf

It offers some basics of why reducing methionine could be useful in slowing aging and increasing years of healthy life, along with information and ways to reduce methionine in our diets.

So far most research has been done with animals, and may not translate to humans. Regardless, now I'm eating a lot less methionine.

BACKGROUND

A) Amino acids are the building blocks of proteins. Proteins are used in multiple functions in the body, like building blocks used in muscle, organs, skin, eyes, and elsewhere. Also protein is a signaling component in hormones, as well as used in enzymes, transportation and storage of molecules, and antibodies.

Methionine is an amino acid. Research shows low methionine diets increase lifespan in animals. Some recent research:
http://scholar.google.com/scholar?hl=en&q=methionine+restriction&btnG=&as_sdt=1%2C5&as_sdtp=

APPLICATION

To implement methionine restriction in:
Rats: Call Ralston-Purina supplier, order low methionine rat chow.
Humans: It's not so easy. Try going into a restaurant and ordering a low-methionine steak.

Basically for us humans, practical methionine reduction is this: Eat more low methionine foods, and less high methionine foods.

It's very difficult to determine a diet providing optimum methionine for peak human healthspan and lifespan. Methionine is an essential amino acid and some is needed. People can be different in their requirement.

There is some evidence that cancer growth can be (partially) controlled with low methionine diet.

Some LOWER methionine foods to eat MORE of (detailed chart is below):
Many vegan foods are low in methionine.
Fruits
Lentil and pinto beans, potato, almonds
Sweet potato (baked), broccoli, mushrooms

Low methionine protein powder:
Sunwarrior *Warrior Blend* "raw vegan" protein powder
https://www.sunwarrior.com/store/
I ordered the product. It lists methionine as 188 mg per 25 g serving. That's low.
I thought the original blend tasted bad, but their current product (as of 6/2015) is impromed.
Many of the other low methionine foods (almonds, tomatoes, strawberries etc) taste great.
I often have *Vegan Proteins+* by Genuine Health which I bought at Mother's Market (southern California). It has 231 mg/serving. It's much better so sometimes I mix the two.
Also *100% Vegan Protein* by Biochem Sports. I use the chocolate, which tastes pretty good, though chalky.

Some HIGH methionine foods to REDUCE (detailed chart is below):
beef, chicken, pork, eggs (whites), cheese, turkey, fish, rice, brazil nuts.
Cottage cheese, cream cheese, cheddar and parmesan
Nuts, seeds and legumes
Sesame seeds, sunflower seeds, flaxseed, cashews, pistachios, Brazil nuts and roasted pumpkin seeds
Turnip greens, spinach, zucchini, mushrooms and asparagus.
Kidney beans, white beans and black beans
Soybeans and products made from soy — such as textured soy protein, soy sauce, soy flour and tofu

Glycine:
Taking the amino acid glycine is said to offset methionine, and that glycine causes the liver to remove methionine.

Or maybe it's kind of like taking lysine when you have a cold sore. For this it's been said that without lysine it takes a week for a cold sore to go away -- with lysine it only takes seven days.

I usually take some glycine after eating high methionine foods.

One highly knowledgeable expert in nutrition who compiles a "consumer reports of nutrition products". He advised me that 2 grams of glycine with normal meat meal is needed – but you should start off with a much lower amount and build up to it.

One scientist, Raymond Peat, reported useful info that had nothing to do with methionine restriction. He reported that in primitive times humans ate whole animals – skin, bones, tendons, gelatin, tripe, feet, hooves, ears, connective tissue, and some organ meats. By eating only the meat we became imbalanced in glycine

Josh Mitteldorf wrote:
http://joshmitteldorf.scienceblog.com/2013/05/13/could-cutting-this-one-nutrient-make-you-live-longer/
A long shot idea
Glycine is the simplest of the 20 amino acids. (It is literally just an amine group linked to an acid group, NH_2CH_2COOH.) It was reported at an experimental biology conference two years ago that increasing glycine has similar effects to decreasing methionine in the diet, showing life extension and some of the same metabolic benefits in rats. To my knowledge, this has not yet been written up in a peer-reviewed journal. I've written to the author, and will add a comment below this post if I hear anything.
Here is the study:
Dietary glycine supplementation mimics lifespan extension by dietary methionine restriction in Fisher 344 rats
http://www.fasebj.org/cgi/content/meeting_abstract/25/1_MeetingAbstracts/528.2

E) References

The following chart was taken from Ben Best's web site at http://www.benbest.com/calories/Meth.html which is based on FOOD VALUES OF PORTIONS COMMONLY USED by Jean Pennington (1989).
http://www.amazon.com/gp/product/0062731564/

Methionine in Foods (milligrams/100 grams of food)

TABLE 2 Food	Methionine
Cheese, parmesan (dry)	971
Skim milk (dry)	907
Tuna (light)	862
Cheese, Swiss (processed)	792
Corned beef	711

Cheese, Cheddar	**661**
Salmon	**631**
Cheese, American (processed)	**579**
Extra lean beef	**572**
Walnuts, black	**479**
Egg white	**394**
Whole boiled egg	**392**
Pistashio nuts	**386**
Peanuts	**289**
Walnuts, Persian (English)	**286**
Cashew nuts	**279**
Cheerios	**254**
Oatmeal	**250**
Broad (Fava) beans	**239**
Soybeans	**224**
Barley	**208**
Tofu (firm)	**202**
Grape nuts (cereal)	**200**
Shredded wheat (cereal)	**193**
Wheaties (cereal)	**168**
Rice	**167**

Almonds	**161**
Yogurt	**155**
White beans	**146**
Black turtle beans	**141**
Navy beans	**131**
Kidney (red) beans	**130**
Chickpeas (garbanzos)	**116**
Blackeyed peas (cowpeas)	**110**
Lima beans	**100**
Macadamia nuts	**93**
Millet	**85**
Peas (raw)	**82**
Adzuki beans	**79**
Lentils	**77**
Corn	**70**
Spaghetti	**51**
Sweet potato (baked)	**42**
Mushrooms	**40**
Avacado	**39**
Mung beans	**35**
Broccoli	**34**

Potato	**33**
Pinto beans	**33**
Amaranth	**30**
Cauliflower	**28**
Oranges	**22**
Tomato paste	**19**
Kale	**18**
Banana	**17**
Blueberries	**11**
Onion	**10**
Tomato	**8**
Apple	**2**
Grapefruit	**2**
Strawberries	**1**

REFERENCES

Here are some from Google Scholar.
Main site to search: https://www.scholar.google.com/

"methionine restriction aging" was entered:
https://scholar.google.com/scholar?hl=en&q=methionine+restriction+aging&btnG=&as_sdt=1%2C5&as_sdtp=

About Google Scholar:
http://www.scholar.google.com/intl/en/scholar/about.html

Search tips:

http://www.scholar.google.com/intl/en-US/scholar/help.html

Other references – If you haven't already please do some google scholar and google searches on "methionine restriction", "low methionine foods", and the like

http://www.nutritionaloncologyresearchinstitute.com/uploads/Methionine_Restriction_Protocol.pdf

Low Methionine foods (tedious multiple page format)
http://wholefoodcatalog.info/nutrient/methionine/foods/low/

High Methionine foods
http://nutritiondata.self.com/foods-00008400000000000000.html
http://www.wisegeek.com/what-are-common-foods-with-methionine.htm#slideshow

Some other articles
http://www.ncbi.nlm.nih.gov/pubmed/3668700
https://www.fightaging.org/archives/2013/05/on-methionine-restriction-1.php
http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=1433500